1. List the members of your group below. Underline your name.

2. List the indices of the array locations probed when the array `a` depicted below is searched for each of the following elements using *sequential search*:

   (a) 14

   (b) 18

   (c) 33

i	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
a[i]	23	57	36	92	18	63	43	75	12	40	14	97	98	31	5

3. Populate the following table for sequential search of the array in Question 2. Show your work and justify your answers.

	number of array probes		
	minimum	maximum	average
successful search:			
unsuccessful search:			

4. Reorganize the array of Question 2 for *binary search* and depict the resulting array below, using the tabular form used there.

5. List the indices of the array locations probed when the array `a` depicted below is searched for each of the following elements using *binary search*:

   (a) 14

   (b) 18

   (c) 33

6. Populate the following table for binary search of the array in Question 5. Show your work and justify your answers.

	number of array probes		
	minimum	maximum	average
successful search:			
unsuccessful search:			

7. Repeat Questions 5 and 6 using *interpolation search*.

8. This question is based on Saxena's paper on dominance queries.[1]

$$P = \bigcup_{i=0}^{9} \left\{ (c_{3i+1}, c_{3i+2}, c_{3i+3}) \mid c_j = \lfloor 10^{2j}(\pi - 3) \rfloor \bmod 100 \right\}$$

(a) Provide a simple yet precise English description of the set P defined above.

(b) List the elements of P explicitly. For your reference,

$\pi = 3.141592\,653589\,793238\,462643\,383279\,502884\,197169\,399375\,105820\,974944\ldots$

[1] Sanjeev Saxena, "Dominance made simple," *Information Processing Letters* 109/9 (2009).

(c) What is the result of the *dominance query* over the above set P, given query point $q = (50, 40, 70)$?

(d) What is the result of the *three-sided query* with the query triple $q = (30, 80, 50)$?

(e) Describe an $O(1)$ algorithm for answering *range maxima queries*, with no restriction on preprocessing time.